

CLAIMS

1. A method of transforming data from a high-dimensional to low-dimensional design space and deriving an optimum value for a predetermined function representative of the transformed data in the low-dimensional design space, which derivation is further effected in the low-dimensional design space in dependence upon an inspection of the transformed data.
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2. A method of transforming data from a high-dimensional to low-dimensional design space, and deriving a conditional value for a predetermined function representative of the transformed data in the low-dimensional design space, which derivation is further effected in the low-dimensional design space in dependence upon an inspection of the transformed data.
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3. A method as claimed in claim 1 or 2 wherein the value is derived by (a) establishing a mathematical combination of a number of independent design variables and dependent design variables relating to the function, and (b) modifying said combination in the low-dimensional design space to derive therefrom the desired value for the function at which various constraints associated with the function are satisfied and at which the function has a conditional high or low value in relation to other possible values of the function which are determined in accordance with the modification of said combination.
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4. A method as claimed in claim 1, 2 or claim 3 wherein said transformation into the low-dimensional design space is performed by application of a Generative Topographic Map (GTM) technique.
5. A method as claimed in any preceding claim, comprising the step of transforming data from a first high-dimensional design space and from a second, different high-dimensional design space into a low-dimensional design space, comparing the different transformed data sets in said low-dimensional design space and identifying therefrom similarities between the different transformed data sets to indicate a correspondence between the first and second high-dimensional design spaces.
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6. A method as claimed in claim 5 wherein the first high-dimensional design space is a 5-dimensional design space, the second high-dimensional design space is an 8-dimensional design space, the third is a 14-dimensional design space, and the low-dimensional design space is a two-dimensional design space.
7. A method as claimed in any of claims 3 to 6 wherein the data transformation into the low-dimensional design space is performed in a manner which takes account of the effect of each of the design variables relating to the function.
8. A method as claimed in any preceding claim wherein the value derivation is effected by generating an image map representation of the transformed data in the low-dimensional design space, and visually identifying an intersecting region in the image map representation, which intersecting region provides an indication of said value.
9. A method as claimed in any preceding claim for application to an aircraft design or to an aerodynamic surface design.
10. A method substantially as herein described with reference to the accompanying drawings.
11. A program element comprising program code operable to carry out a method as claimed in any preceding claim.
12. The program element of claim 11 on a carrier medium.
13. A data processing system for transforming data from a high-dimensional to low-dimensional design space adapted and arranged to carry out a method as claimed in any preceding claim.
14. A data processing system substantially as herein described with reference to the accompanying drawings.